MAXIMUM SPECIFIC GRAVITY
OF
HOT MIX ASPHALT
AASHTO T 209

APPARATUS

- [ ] Balance
  - [ ] Sufficient capacity for sample, readable to 0.1 g or better, in accordance with AASHTO M 231, Class G2
  - [ ] Suspension apparatus from center of balance pan
  - [ ] Suspension wire of smallest practical size
- [ ] Water Bath
  - [ ] Equipped with overflow outlet to maintain constant water level
  - [ ] Capable of completely immersing holder and sample
  - [ ] Water is 77 ± 2°F
- [ ] Volumetric Container
  - [ ] Capacity is 2000 – 10,000 mL
  - [ ] Diameter of bowl is 7 to 10 in.
  - [ ] Height of bowl is minimum 6.3 in.
  - [ ] Small piece of No. 200 sieve wire mesh covering hose opening
- [ ] Verified thermometer with subdivisions and maximum scale error of 1°F
- [ ] Oven maintained at 221 ± 9°F
- [ ] Vacuum system capable of subjecting contents to partial vacuum of 25.0-30.0 mm Hg
- [ ] Vacuum Measuring Device
  - [ ] Residual pressure manometer
  - [ ] Calibrated vacuum gauge
- [ ] Bleeder valve
- [ ] Electric fan
- [ ] Arrangement of testing apparatus in accordance with Figure 1 (One or more filter flasks for a water vapor trap may be used)
- [ ] Mechanical Shaker (Method A) Shaker for removing air from asphalt mix

SAMPLE PREPARATION

- [ ] Weight of sample as follows (samples larger than capacity of container may be divided into suitable increments, tested, and the results combined)

Nominal Maximum Aggregate Size	Minimum Weight of Sample, g
1 1/2 in.	4000
1 in.	2500
3/4 in.	2500
1/2 in.	1500
3/8 in.	1500
#4	1500

[ ] Dried to constant weight (Note 1) in oven at 221 ± 9°F

Note 1 -- Constant weight is defined as the weight at which further drying at the required drying temperature does not alter the weight by more than 0.05 percent

[ ] Particles of sample separated without fracturing aggregate (Sample may be placed in large pan and warmed in oven until workable)
[ ] Fine aggregate particles not larger than 1/4 in.
[ ] Sample cooled to room temperature
[ ] Sample placed in tared container, weighed, and net sample weight determined **(A)**

Procedure

[ ] Water at approximately 77°F added to cover sample completely
[ ] Entrapped air removed using partial vacuum (25.0–30.0 mm Hg) for 15 ± 2 min
[ ] Container and contents agitated continuously
  [ ] mechanical shaker
  [ ] manually by vigorously shaking container at approximately 2 minute intervals
[ ] Vacuum released with bleed valve by increasing pressure at a rate not to exceed 8 kPa per second

Mass Determination in Water

[ ] Container and sample suspended in water bath and weight determined **(C)** after 10 ± 1 min.
[ ] Container completely emptied immediately
[ ] Container suspended in water without delay and weight determined **(B)**
[ ] Maximum specific gravity calculated correctly to three decimal places (0.000) as follows:

$$\text{Maximum Specific Gravity} = \frac{A}{A - (C - B)}$$

where:

A = weight of dry sample in air, g
B = weight of container in water, g
C = weight of container and sample in water, g

Supplemental Procedure - Mass Determination in Water for Mixtures Containing Porous Aggregate

[ ] Values for **(A), (B),** and **(C)** obtained
[ ] Sample spread before an electric fan to remove surface moisture
[ ] Conglomerations of mixture broken by hand
[ ] Sample stirred intermittently during drying
[ ] Sample weighed at 15 minute intervals until surface dry (Note 2)
[ ] Surface Dry mass recorded **(A_1)**

Note 2 -- Sample is considered surface dry when the loss in weight is less than 0.05 percent between 15 minute intervals

[ ] Maximum specific gravity calculated correctly to three decimal places (0.000) as follows:

$$\text{Maximum Specific Gravity} = \frac{A}{A_1 - (C - B)}$$

where:

A = weight of dry sample in air, g
A_1 = weight of surface-dry sample, g
B = weight of container in water, g
C = weight of container and sample in water, g

NA - Not Applicable
X - Requires Corrective Action
√ - Satisfactory

_____
Acceptance Technician

_____ _____
INDOT Date

Comments:

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